

SEQUENCE LISTING

<110> Harrison, Stephen D.
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<120> GSK3 POLYPEPTIDES

<130> 59516-162/PP-15876.002/200130.524

<140> US10/211,412

<141> 2002-07-31

<150> US09/916,109

<151> 2001-07-25

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<170> FastSEQ for Windows Version 4.0

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<212> PRT

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Asp	Gly	Ser	Lys	Val	Thr	Thr	Val	Val	Ala	Thr	Pro	Gly	Gln	Gly	Pro
		35					40					45			
Asp	Arg	Pro	Gln	Glu	Val	Ser	Tyr	Thr	Asp	Thr	Lys	Val	Ile	Gly	Asn
	50					55					60				
Gly	Ser	Phe	Gly	Val	Val	Tyr	Gln	Ala	Lys	Leu	Cys	Asp	Ser	Gly	Glu
65				70						75					80
Leu	Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg
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Glu	Leu	Gln	Ile	Met	Arg	Lys	Leu	Asp	His	Cys	Asn	Ile	Val	Arg	Leu
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Arg	Tyr	Phe	Phe	Tyr	Ser	Ser	Gly	Glu	Lys	Lys	Asp	Glu	Val	Tyr	Leu
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Asn	Leu	Val	Leu	Asp	Tyr	Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg
		130				135					140				
His	Tyr	Ser	Arg	Ala	Lys	Gln	Thr	Leu	Pro	Val	Ile	Tyr	Val	Lys	Leu
145					150					155					160
Tyr	Met	Tyr	Gln	Leu	Phe	Arg	Ser	Leu	Ala	Tyr	Ile	His	Ser	Phe	Gly
				165				170						175	
Ile	Cys	His	Arg	Asp	Ile	Lys	Pro	Gln	Asn	Leu	Leu	Leu	Asp	Pro	Asp

Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg	His	Tyr	Ser	Arg	Ala	Lys
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Gln	Thr	Leu	Pro	Val	Ile	Tyr	Val	Lys	Leu	Tyr	Met	Tyr	Gln	Leu	Phe
			165					170						175	
Arg	Ser	Leu	Ala	Tyr	Ile	His	Ser	Phe	Gly	Ile	Cys	His	Arg	Asp	Ile
			180					185					190		
Lys	Pro	Gln	Asn	Leu	Leu	Leu	Asp	Pro	Asp	Thr	Ala	Val	Leu	Lys	Leu
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Cys	Asp	Phe	Gly	Ser	Ala	Lys	Gln	Leu	Val	Arg	Gly	Glu	Pro	Asn	Val
210						215					220				
Ser	Tyr	Ile	Cys	Ser	Arg	Tyr	Tyr	Arg	Ala	Pro	Glu	Leu	Ile	Phe	Gly
225					230					235					240
Ala	Thr	Asp	Tyr	Thr	Ser	Ser	Ile	Asp	Val	Trp	Ser	Ala	Gly	Cys	Val
				245					250					255	
Leu	Ala	Glu	Leu	Leu	Leu	Gly	Gln	Pro	Ile	Phe	Pro	Gly	Asp	Ser	Gly
			260					265					270		
Val	Asp	Gln	Leu	Val	Glu	Ile	Ile	Lys	Val	Leu	Gly	Thr	Pro	Thr	Arg
		275					280					285			
Glu	Gln	Ile	Arg	Glu	Met	Asn	Pro	Asn	Tyr	Thr	Glu	Phe	Lys	Phe	Pro
290						295					300				
Gln	Ile	Lys	Ala	His	Pro	Trp	Thr	Lys	Val	Phe	Arg	Pro	Arg	Thr	Pro
305					310					315					320
Pro	Glu	Ala	Ile	Ala	Leu	Cys	Ser	Arg	Leu	Leu	Glu	Tyr	Thr	Pro	Thr
				325					330					335	
Ala	Arg	Leu	Thr	Pro	Leu	Glu	Ala	Cys	Ala	His	Ser	Phe	Phe	Asp	Glu
			340					345					350		
Leu	Arg	Asp	Pro	Asn	Val	Lys	His	Pro	Asn	Gly	Arg	Asp	Thr	Pro	Ala
		355					360					365			
Leu	Phe	Asn	Phe	Thr	Thr	Gln	Glu	Leu	Ser	Ser	Asn	Pro	Pro	Leu	Ala
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Tyr	Thr	Asp	Thr	Lys	Val	Ile	Gly	Asn	Gly	Ser	Phe	Gly	Val	Val	Tyr
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Gln	Ala	Lys	Leu	Cys	Asp	Ser	Gly	Glu	Leu	Val	Ala	Ile	Lys	Lys	Val
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Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg	Glu	Leu	Gln	Ile	Met	Arg	Lys
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Leu	Asp	His	Cys	Asn	Ile	Val	Arg	Leu	Arg	Tyr	Phe	Phe	Tyr	Ser	Ser
				85					90					95	
Gly	Glu	Lys	Lys	Asp	Glu	Val	Tyr	Leu	Asn	Leu	Val	Leu	Asp	Tyr	Val
			100					105					110		
Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg	His	Tyr	Ser	Arg	Ala	Lys	Gln
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Thr	Leu	Pro	Val	Ile	Tyr	Val	Lys	Leu	Tyr	Met	Tyr	Gln	Leu	Phe	Arg

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Ser	Leu	Ala	Tyr	Ile	His	Ser	Phe	Gly	Ile	Cys	His	Arg	Asp	Ile	Lys
145					150					155					160
Pro	Gln	Asn	Leu	Leu	Leu	Asp	Pro	Asp	Thr	Ala	Val	Leu	Lys	Leu	Cys
			165						170					175	
Asp	Phe	Gly	Ser	Ala	Lys	Gln	Leu	Val	Arg	Gly	Glu	Pro	Asn	Val	Ser
			180						185					190	
Tyr	Ile	Cys	Ser	Arg	Tyr	Tyr	Arg	Ala	Pro	Glu	Leu	Ile	Phe	Gly	Ala
		195						200					205		
Thr	Asp	Tyr	Thr	Ser	Ser	Ile	Asp	Val	Trp	Ser	Ala	Gly	Cys	Val	Leu
		210				215					220				
Ala	Glu	Leu	Leu	Leu	Gly	Gln	Pro	Ile	Phe	Pro	Gly	Asp	Ser	Gly	Val
225					230					235					240
Asp	Gln	Leu	Val	Glu	Ile	Ile	Lys	Val	Leu	Gly	Thr	Pro	Thr	Arg	Glu
				245					250					255	
Gln	Ile	Arg	Glu	Met	Asn	Pro	Asn	Tyr	Thr	Glu	Phe	Lys	Phe	Pro	Gln
			260					265					270		
Ile	Lys	Ala	His	Pro	Trp	Thr	Lys	Val	Phe	Arg	Pro	Arg	Thr	Pro	Pro
		275					280					285			
Glu	Ala	Ile	Ala	Leu	Cys	Ser	Arg	Leu	Leu	Glu	Tyr	Thr	Pro	Thr	Ala
		290				295					300				
Arg	Leu	Thr	Pro	Leu	Glu	Ala	Cys	Ala	His	Ser	Phe	Phe	Asp	Glu	Leu
305					310					315					320
Arg	Asp	Pro	Asn	Val	Lys	His	Pro	Asn	Gly	Arg	Asp	Thr	Pro	Ala	Leu
				325					330					335	
Phe	Asn	Phe	Thr	Thr	Gln	Glu	Leu	Ser	Ser	Asn	Pro	Pro	Leu	Ala	Thr
			340					345					350		
Ile	Leu	Ile	Pro	Pro	His	Ala	Arg	Ile							
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<400> 4

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			20					25					30		
Gly	Gly	Gly	Pro	Gly	Gly	Ser	Ala	Ser	Gly	Pro	Gly	Gly	Thr	Gly	Gly
		35					40					45			
Gly	Lys	Ala	Ser	Val	Gly	Ala	Met	Gly	Gly	Gly	Val	Gly	Ala	Ser	Ser
	50					55					60				
Ser	Gly	Gly	Gly	Pro	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gly	Gly	Pro
65				70					75						80
Gly	Ala	Gly	Thr	Ser	Phe	Pro	Pro	Pro	Gly	Val	Lys	Leu	Gly	Arg	Asp
				85					90					95	
Ser	Gly	Lys	Val	Thr	Thr	Val	Val	Ala	Thr	Leu	Gly	Gln	Gly	Pro	Glu
			100					105					110		
Arg	Ser	Gln	Glu	Val	Ala	Tyr	Thr	Asp	Ile	Lys	Val	Ile	Gly	Asn	Gly
		115					120					125			
Ser	Phe	Gly	Val	Val	Tyr	Gln	Ala	Arg	Leu	Ala	Glu	Thr	Arg	Glu	Leu
	130					135					140				
Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg	Glu
145					150					155					160

Leu	Gln	Ile	Met	Arg	Lys	Leu	Asp	His	Cys	Asn	Ile	Val	Arg	Leu	Arg
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Tyr	Phe	Phe	Tyr	Ser	Ser	Gly	Glu	Lys	Lys	Asp	Glu	Leu	Tyr	Leu	Asn
			180					185					190		
Leu	Val	Leu	Glu	Tyr	Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg	His
		195					200					205			
Phe	Thr	Lys	Ala	Lys	Leu	Thr	Ile	Pro	Ile	Leu	Tyr	Val	Lys	Val	Tyr
	210					215					220				
Met	Tyr	Gln	Leu	Phe	Arg	Ser	Leu	Ala	Tyr	Ile	His	Ser	Gln	Gly	Val
225					230					235				240	
Cys	His	Arg	Asp	Ile	Lys	Pro	Gln	Asn	Leu	Leu	Val	Asp	Pro	Asp	Thr
			245					250						255	
Ala	Val	Leu	Lys	Leu	Cys	Asp	Phe	Gly	Ser	Ala	Lys	Gln	Leu	Val	Arg
		260						265					270		
Gly	Glu	Pro	Asn	Val	Ser	Tyr	Ile	Cys	Ser	Arg	Tyr	Tyr	Arg	Ala	Pro
	275						280					285			
Glu	Leu	Ile	Phe	Gly	Ala	Thr	Asp	Tyr	Thr	Ser	Ser	Ile	Asp	Val	Trp
	290					295					300				
Ser	Ala	Gly	Cys	Val	Leu	Ala	Glu	Leu	Leu	Leu	Gly	Gln	Pro	Ile	Phe
305					310					315				320	
Pro	Gly	Asp	Ser	Gly	Val	Asp	Gln	Leu	Val	Glu	Ile	Ile	Lys	Val	Leu
			325					330						335	
Gly	Thr	Pro	Thr	Arg	Glu	Gln	Ile	Arg	Glu	Met	Asn	Pro	Asn	Tyr	Thr
		340						345					350		
Glu	Phe	Lys	Phe	Pro	Gln	Ile	Lys	Ala	His	Pro	Trp	Thr	Lys	Val	Phe
		355					360					365			
Lys	Ser	Arg	Thr	Pro	Pro	Glu	Ala	Ile	Ala	Leu	Cys	Ser	Ser	Leu	Leu
	370					375					380				
Glu	Tyr	Thr	Pro	Ser	Ser	Arg	Leu	Ser	Pro	Leu	Glu	Ala	Cys	Ala	His
385					390					395					400
Ser	Phe	Phe	Asp	Glu	Leu	Arg	Cys	Leu	Gly	Thr	Gln	Leu	Pro	Asn	Asn
			405						410					415	
Arg	Pro	Leu	Pro	Pro	Leu	Phe	Asn	Phe	Ser	Ala	Gly	Glu	Leu	Ser	Ile
		420						425					430		
Gln	Pro	Ser	Leu	Asn	Ala	Ile	Leu	Ile	Pro	Pro	His	Leu	Arg	Ser	Pro
	435						440					445			
Ala	Gly	Thr	Thr	Thr	Leu	Thr	Pro	Ser	Ser	Gln	Ala	Leu	Thr	Glu	Thr
	450					455					460				
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Asn	Ser	Ser													

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<213> Homo sapiens

<400> 5

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Ala	Arg	Thr	Ser	Ser	Phe	Ala	Glu	Pro	Gly	Gly	Gly	Gly	Gly	Gly	Gly
		20					25						30		
Gly	Gly	Gly	Pro	Gly	Gly	Ser	Ala	Ser	Gly	Pro	Gly	Gly	Thr	Gly	Gly
	35					40						45			
Gly	Lys	Ala	Ser	Val	Gly	Ala	Met	Gly	Gly	Gly	Val	Gly	Ala	Ser	Ser

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Ser Gly Gly Gly Pro	Gly Gly Ser Gly Gly	Gly Gly Ser Gly Gly	Gly Gly Ser Gly Gly	Pro
65	70	75	80	
Gly Ala Gly Thr Ser	Phe Pro Pro Pro	Gly Val Lys Leu Gly	Arg Asp	
	85	90	95	
Ser Gly Lys Val Thr	Thr Val Val Ala	Thr Leu Gly Gln	Gly Pro Glu	
	100	105	110	
Arg Ser Gln Glu Val	Ala Tyr Thr Asp	Ile Lys Val Ile	Gly Asn Gly	
	115	120	125	
Ser Phe Gly Val Val	Tyr Gln Ala Arg	Leu Ala Glu Thr	Arg Glu Leu	
	130	135	140	
Val Ala Ile Lys Lys	Val Leu Gln Asp	Lys Arg Phe Lys	Asn Arg Glu	
145	150	155	160	
Leu Gln Ile Met Arg	Lys Leu Asp His	Cys Asn Ile Val	Arg Leu Arg	
	165	170	175	
Tyr Phe Phe Tyr Ser	Ser Gly Glu Lys	Lys Asp Glu Leu	Tyr Leu Asn	
	180	185	190	
Leu Val Leu Glu Tyr	Val Pro Glu Thr	Val Tyr Arg Val	Ala Arg His	
	195	200	205	
Phe Thr Lys Ala Lys	Leu Thr Ile Pro	Ile Leu Tyr Val	Lys Val Tyr	
	210	215	220	
Met Tyr Gln Leu Phe	Arg Ser Leu Ala	Tyr Ile His Ser	Gln Gly Val	
225	230	235	240	
Cys His Arg Asp Ile	Lys Pro Gln Asn	Leu Leu Val Asp	Pro Asp Thr	
	245	250	255	
Ala Val Leu Lys Leu	Cys Asp Phe Gly	Ser Ala Lys Gln	Leu Val Arg	
	260	265	270	
Gly Glu Pro Asn Val	Ser Tyr Ile Cys	Ser Arg Tyr Tyr	Arg Ala Pro	
	275	280	285	
Glu Leu Ile Phe Gly	Ala Thr Asp Tyr	Thr Ser Ser Ile	Asp Val Trp	
	290	295	300	
Ser Ala Gly Cys Val	Leu Ala Glu Leu	Leu Leu Gly Gln	Pro Ile Phe	
305	310	315	320	
Pro Gly Asp Ser Gly	Val Asp Gln Leu	Val Glu Ile Ile	Lys Val Leu	
	325	330	335	
Gly Thr Pro Thr Arg	Glu Gln Ile Arg	Glu Met Asn Pro	Asn Tyr Thr	
	340	345	350	
Glu Phe Lys Phe Pro	Gln Ile Lys Ala	His Pro Trp Thr	Lys Val Phe	
	355	360	365	
Lys Ser Arg Thr Pro	Pro Glu Ala Ile	Ala Leu Cys Ser	Ser Leu Leu	
	370	375	380	
Glu Tyr Thr Pro Ser	Ser Arg Leu Ser	Pro Leu Glu Ala	Cys Ala His	
385	390	395	400	
Ser Phe Phe Asp Glu	Leu Arg Cys Leu	Gly Thr Gln Leu	Pro Asn Asn	
	405	410	415	
Arg Pro Leu Pro Pro	Leu Phe Asn Phe	Ser Ala Gly Glu	Leu Ser Ile	
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Gln Pro Ser Leu Asn	Ala Ile Leu Ile	Pro Pro His Leu	Arg Ser	
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<213> Homo sapiens.

<400> 6

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 35 40 45
 Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Phe Lys Asn Arg Glu
 50 55 60
 Leu Gln Ile Met Arg Lys Leu Asp His Cys Asn Ile Val Arg Leu Arg
 65 70 75 80
 Tyr Phe Phe Tyr Ser Ser Gly Glu Lys Lys Asp Glu Leu Tyr Leu Asn
 85 90 95
 Leu Val Leu Glu Tyr Val Pro Glu Thr Val Tyr Arg Val Ala Arg His
 100 105 110
 Phe Thr Lys Ala Lys Leu Thr Ile Pro Ile Leu Tyr Val Lys Val Tyr
 115 120 125
 Met Tyr Gln Leu Phe Arg Ser Leu Ala Tyr Ile His Ser Gln Gly Val
 130 135 140
 Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val Asp Pro Asp Thr
 145 150 155 160
 Ala Val Leu Lys Leu Cys Asp Phe Gly Ser Ala Lys Gln Leu Val Arg
 165 170 175
 Gly Glu Pro Asn Val Ser Tyr Ile Cys Ser Arg Tyr Tyr Arg Ala Pro
 180 185 190
 Glu Leu Ile Phe Gly Ala Thr Asp Tyr Thr Ser Ser Ile Asp Val Trp
 195 200 205
 Ser Ala Gly Cys Val Leu Ala Glu Leu Leu Leu Gly Gln Pro Ile Phe
 210 215 220
 Pro Gly Asp Ser Gly Val Asp Gln Leu Val Glu Ile Ile Lys Val Leu
 225 230 235 240
 Gly Thr Pro Thr Arg Glu Gln Ile Arg Glu Met Asn Pro Asn Tyr Thr
 245 250 255
 Glu Phe Lys Phe Pro Gln Ile Lys Ala His Pro Trp Thr Lys Val Phe
 260 265 270
 Lys Ser Arg Thr Pro Pro Glu Ala Ile Ala Leu Cys Ser Ser Leu Leu
 275 280 285
 Glu Tyr Thr Pro Ser Ser Arg Leu Ser Pro Leu Glu Ala Cys Ala His
 290 295 300
 Ser Phe Phe Asp Glu Leu Arg Cys Leu Gly Thr Gln Leu Pro Asn Asn
 305 310 315 320
 Arg Pro Leu Pro Pro Leu Phe Asn Phe Ser Ala Gly Glu Leu Ser Ile
 325 330 335
 Gln Pro Ser Leu Asn Ala Ile Leu Ile Pro Pro His Leu Arg Ser Pro
 340 345 350
 Ala Gly Thr Thr Leu Thr Pro Ser Ser Gln Ala Leu Thr Glu Thr
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 Pro Thr Ser Ser Asp Trp Gln Ser Thr Asp Ala Thr Pro Thr Leu Thr
 370 375 380
 Asn Ser Ser
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<213> Homo sapiens

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Arg	Ser	Gln	Glu	Val	Ala	Tyr	Thr	Asp	Ile	Lys	Val	Ile	Gly	Asn	Gly
		20						25					30		
Ser	Phe	Gly	Val	Val	Tyr	Gln	Ala	Arg	Leu	Ala	Glu	Thr	Arg	Glu	Leu
		35					40					45			
Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg	Glu
		50				55					60				
Leu	Gln	Ile	Met	Arg	Lys	Leu	Asp	His	Cys	Asn	Ile	Val	Arg	Leu	Arg
65				70					75					80	
Tyr	Phe	Phe	Tyr	Ser	Ser	Gly	Glu	Lys	Lys	Asp	Glu	Leu	Tyr	Leu	Asn
			85						90					95	
Leu	Val	Leu	Glu	Tyr	Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg	His
			100					105					110		
Phe	Thr	Lys	Ala	Lys	Leu	Thr	Ile	Pro	Ile	Leu	Tyr	Val	Lys	Val	Tyr
		115				120						125			
Met	Tyr	Gln	Leu	Phe	Arg	Ser	Leu	Ala	Tyr	Ile	His	Ser	Gln	Gly	Val
		130				135					140				
Cys	His	Arg	Asp	Ile	Lys	Pro	Gln	Asn	Leu	Leu	Val	Asp	Pro	Asp	Thr
145					150					155				160	
Ala	Val	Leu	Lys	Leu	Cys	Asp	Phe	Gly	Ser	Ala	Lys	Gln	Leu	Val	Arg
			165						170					175	
Gly	Glu	Pro	Asn	Val	Ser	Tyr	Ile	Cys	Ser	Arg	Tyr	Tyr	Arg	Ala	Pro
			180					185						190	
Glu	Leu	Ile	Phe	Gly	Ala	Thr	Asp	Tyr	Thr	Ser	Ser	Ile	Asp	Val	Trp
		195				200						205			
Ser	Ala	Gly	Cys	Val	Leu	Ala	Glu	Leu	Leu	Leu	Gly	Gln	Pro	Ile	Phe
	210					215					220				
Pro	Gly	Asp	Ser	Gly	Val	Asp	Gln	Leu	Val	Glu	Ile	Ile	Lys	Val	Leu
225					230					235				240	
Gly	Thr	Pro	Thr	Arg	Glu	Gln	Ile	Arg	Glu	Met	Asn	Pro	Asn	Tyr	Thr
			245						250					255	
Glu	Phe	Lys	Phe	Pro	Gln	Ile	Lys	Ala	His	Pro	Trp	Thr	Lys	Val	Phe
			260					265					270		
Lys	Ser	Arg	Thr	Pro	Pro	Glu	Ala	Ile	Ala	Leu	Cys	Ser	Ser	Leu	Leu
		275					280					285			
Glu	Tyr	Thr	Pro	Ser	Ser	Arg	Leu	Ser	Pro	Leu	Glu	Ala	Cys	Ala	His
	290					295					300				
Ser	Phe	Phe	Asp	Glu	Leu	Arg	Cys	Leu	Gly	Thr	Gln	Leu	Pro	Asn	Asn
305					310					315				320	
Arg	Pro	Leu	Pro	Pro	Leu	Phe	Asn	Phe	Ser	Ala	Gly	Glu	Leu	Ser	Ile
			325						330					335	
Gln	Pro	Ser	Leu	Asn	Ala	Ile	Leu	Ile	Pro	Pro	His	Leu	Arg	Ser	
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<212> PRT

<213> Artificial Sequence

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<223> N-terminus addition sequence

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Glu Phe Met Pro Thr Glu Ala Met Ala Ala Pro Lys Arg Val Ile

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<220>

<223> N-terminus addition sequence

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Glu Tyr Met Pro Met Glu Gly Gly Gly

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<213> Artificial Sequence

<220>

<223> elution peptide

<400> 10

Glu Tyr Met Pro Thr Asp

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<210> 11

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<223> Peptide substrate phosphorylatable by GSK3

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<222> 2, 3, 4

<223> Xaa = Any Amino Acid

<400> 11

Ser Xaa Xaa Xaa Ser

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